Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Canceled)

2. (Currently amended) The endosomal lysing polymer of claim [[1]] 5 is a biocompatible polymer.

3. (Currently amended) The endosomal lysing polymer of claim [[1]] 5 is a biodegradable polymer.

4. (Currently amended) The endosomal lysing polymer of claim [[1]] 5 is a biocompatible and biodegradable polymer.

5. (Currently amended) An endosomal lysing polymer comprising

at least one hydrolyzable functional moiety selected from the group consisting of ortho-esters, hydrazones, and cis-acetonyls, wherein an endosomal lysing agent is released upon hydrolysis of the hydrolyzable functional moiety; and

at least one ionizable functional moiety, wherein the ionizable functional moiety comprises a proton acceptor site and is operably linked to the hydrolyzable functional moiety;

wherein said polymer is capable of effecting the lysis of an endosome in response to a change in pH.

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the hydrolysis of said one or more hydrolyzable functional moieties effects a hydrophobic/hydrophilic transition of said polymer.

11. (Previously presented) The endosomal lysing polymer of claim 10, wherein said hydrolysis further effects the release of an endosomolytic agent capable of disrupting lipid bilayers.

12. (Previously presented) The endosomal lysing polymer of claim 5, wherein the ionizable functional moiety comprises a nitrogen atom.

13. (Canceled)

14. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the ortho-ester is selected from the group consisting of N-[2-methyl-1,3-O-ethoxyethylidine-propanediol]methacrylamide, ortho-ester derivatives of tartaric acid, ortho-ester derivatives of threitol, and ortho-ester derivatives of dithiothreitol.

15. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the polymer is combined in a form selected from the group consisting of:

mixed polymers;
linear co-polymers;
branched co-polymers; and
dendrimer branched co-polymers.

16. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein said polymer is further functionalized with a targeting agent selected from the group consisting of low density lipoproteins, transferrin, asiaglycoproteins, gp120 envelope protein of human immunodeficiency virus, antibodies and carbohydrates.

17. (Currently amended) A biocompatible composition comprising:

a packaging agent, characterized by an ability to bind to a therapeutic agent and mediate import into endosomes; and

an endosomal lysing polymer comprising

at least one hydrolyzable functional moiety selected from the group consisting of ortho-esters, hydrazones, and cis-acetonyls, wherein an endosomal lysing agent is released upon hydrolysis of the hydrolyzable functional moiety; and

at least one ionizable functional moiety, wherein the ionizable functional moiety comprises a proton acceptor site and is operably linked to the hydrolyzable functional moiety;

wherein said polymer is capable of effecting the lysis of an endosome in response to a change in pH.

18. (Canceled)

19. (Canceled)

20. (Currently amended) The biocompatible composition of claim 17 [[or 18]], wherein said packaging agent and said endosomal lysing polymer are combined in a form selected from the group consisting of:

mixed polymers;

linear co-polymers;

branched co-polymers; and

dendrimer branched co-polymers.

21. (Currently amended) The biocompatible composition of claim 17 [[or claim 18]], wherein said therapeutic agent comprises a nucleic acid.

22. (Currently amended) The biocompatible composition of claim 17 [[or claim 18]], wherein the packaging agent associates with the therapeutic agent through a covalent interaction.

23. (Currently amended) The biocompatible composition of claim 17 [[or claim 18]], wherein the packaging agent associates with the therapeutic agent through a non-covalent interaction.

24. (Currently amended) The composition of claim 21 [[17 or claim 18]], wherein the packaging agent condenses the nucleic acid.

25. (Currently amended) The composition of claim 21 [[17 or claim 18]], wherein the packaging agent condenses the nucleic acid to a size less than 150 nm.

26. (Currently amended) The composition of claim 17 [[or claim 18]], wherein the packaging agent comprises a material with high charge density.

27. (Previously presented) The composition of claim 26, wherein said packaging agent comprises a tertiary amine or a quaternary amine.

28. (Previously presented) The composition of claim 27, wherein said packaging agent is selected from the group consisting of 2-[dimethylamino]ethyl methacrylate, (3-aminopropyl)methacrylamide, 2-aminoethyl methacrylamide, aspartic acid, glutamic acid and polymers thereof.

29. (Currently amended) The composition of claim 17 [[or claim 18]], wherein the hydrolysis of said one or more hydrolyzable functional moieties effects a hydrophobic/hydrophilic transition of said polymer.

30. (Currently amended) The composition of claim 17 [[or claim 18]], wherein said hydrolysis further effects the release of an endosomolytic agent capable of disrupting lipid bilayers.

31. (Canceled)

32. (Currently amended) A cell delivery composition comprising:
a compound to be delivered to a cell;
a delivery agent bound to the compound; and
the endosomal lysing polymer of claim [[1 or]] 5.

33. (Canceled)

34. (Canceled)

35. (Previously presented) The cell delivery composition of claim 32, wherein the compound to be delivered to a cell is selected from the group consisting of anti-AIDS substances, anti-cancer substances, antibiotics, immunosuppressants, anti-viral substances, enzyme inhibitors, neurotoxins, opioids, hypnotics, antihistamines, lubricants, tranquilizers, anti-convulsants, muscle relaxants, anti-Parkinson substances, anti-spasmodics and muscle contractants, miotics, anti-cholinergics, anti-glaucoma compounds, anti-parasite compounds, anti-protozoal compounds, anti-hypertensives, analgesics, anti-pyretics, anti-inflammatory agents, local anesthetics, ophthalmics, prostaglandins, anti-depressants, anti-psychotic substances, anti-emetics, imaging agents, specific targeting agents, neurotransmitters, proteins, cell response modifiers, vaccines, anti-sense agents, RNA and ribozymes.

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Currently amended) A method of lysing an endosome, the method comprising the steps of:

providing a composition for endosomal uptake into the cell; and

contacting the composition with the cell in the presence of an endosomal lysing polymer comprising

at least one hydrolyzable functional moiety selected from the group consisting of ortho-esters, hydrazones, and cis-acetonyls, wherein an endosomal lysing agent is released upon hydrolysis of the hydrolyzable functional moiety; and

at least one ionizable moiety, wherein the ionizable functional moiety comprises a proton acceptor site and is operably linked to the hydrolyzable functional moiety;

wherein said polymer is capable of effecting the lysis of an endosome in response to a change in pH.

40. (Canceled)

41. (Canceled)

42. (Currently Amended) A method for introducing a nucleic acid into a cell or a subcellular component, the method comprising the steps of:

providing a biocompatible delivery composition comprising:

a packaging agent;

an endosomal lysing polymer comprising

at least one hydrolyzable functional moiety selected from the group consisting of ortho-esters, hydrazones, and cis-acetonyls, wherein an endosomal lysing agent is released upon hydrolysis of the hydrolyzable functional moiety; and

at least one ionizable functional moiety, wherein the ionizable functional

moiety comprises a proton acceptor site and is operably linked to the hydrolyzable functional moiety;

wherein said polymer is capable of effecting the lysis of an endosome in response to a change in pH; and

a nucleic acid; and

contacting the composition with cells.

43. (Canceled)

44. (Canceled)

45. (Previously presented) The method of claim 42, further comprising contacting the composition with cells in the absence of a known endosomal lysing component selected from the group consisting of chloroquine, polyethyleneimine, fusogenic peptides, inactivated adenoviruses and combinations thereof.

46. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the endosomal lysing agent is ethanol.

47. (Previously presented) The biocompatible composition of claim 17, wherein the endosomal lysing agent is ethanol.

48. (Previously presented) The method of claim 39 or 42, wherein the endosomal lysing agent is ethanol.

49. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the hydrolyzable functional moiety is an ortho-ester.

50. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the hydrolyzable functional moiety is a hydrazone.

51. (Currently amended) The endosomal lysing polymer of claim [[1 or]] 5, wherein the hydrolyzable functional moiety is a cis-acetonyl.

52. (Previously presented) The endosomal lysing polymer of claim 5, wherein the ionizable functional moiety is an imidazole group.